CLAIMS

What is Claimed is:

1. An electronic component, comprising:

at least one face;

a plurality of microelectronic spring contacts mounted to said at least one face, each of said plurality of microelectronic spring contacts comprising a base mounted to said at least one face, a contoured beam integral with said base and extending from a side of said base away from said at least one face, and a free end of said beam opposite to said base, wherein said beam has an unsupported span between said free end and said base, and wherein each of said microelectronic spring contacts comprises an integral layer of resilient material.

2. The electronic component of Claim 1, wherein said electronic component further comprises a die cut from a semiconductor wafer, said die comprising an integrated circuit having a plurality of terminals on said at least one face thereof, wherein selected ones of said plurality of microelectronic spring contacts are connected to selected ones of said plurality of terminals.

3. The electronic component of Claim 1, wherein said electronic component further comprises a semiconductor wafer, said wafer comprising a plurality of integrated circuits having a plurality of terminals on said at least one face thereof, wherein selected ones of said plurality of microelectronic spring contacts are connected to selected ones of said plurality of terminals.

4. The electronic component of Claim 1, wherein said electronic component further comprises an integrated circuit socket, said socket comprising a back surface opposing said at least one face, said back surface having a plurality of terminals, wherein selected ones of said plurality of microelectronic springs are connected to selected ones of said terminals.

5. The electronic component of Claim 1, wherein said electronic component further comprises an interposer, said interposer comprising a substrate having a second surface opposing said at least one face; and

a second plurality of microelectronic spring contacts mounted to said second surface, each of said second plurality of microelectronic spring contacts comprising a base mounted to said at least one face, a contoured essentially sheet-like beam integral with said base and extending from a side of said base away from said at least one face, and free end of said beam opposite to said base, wherein said beam has an unsupported span between said tip and said base, and wherein each of said microelectronic spring contacts comprises an integral layer of resilient material;

wherein ones of said second plurality of microelectronic spring contacts are connected to ones of said plurality of microelectronic spring contacts on said at least one face.

6. The electronic component of Claim 5, wherein said electronic component further comprises a test head assembly, said assembly comprising:

a fixture, said interposer supported by said fixture; and

a contactor coupled to said interposer.

7. The electronic component of Claim 1, wherein said electronic component further comprises a test head assembly, said assembly comprising:

a fixture; and

a contactor supported by said fixture, said contactor comprising said at least one face.

8. The electronic component of Claim 1, wherein said beam, viewed in a direction normal to said substrate surface, is tapered so as to have a generally triangular shape.

9. The electronic component of Claim 1, wherein each of said microelectronic spring contacts is formed by depositing the integral layer of resilient material on a sacrificial layer using a method selected from electroplating, electroless plating, sputtering, chemical vapor deposition, or physical vapor deposition.

10. The electronic component of Claim 1, wherein each of said microelectronic spring contacts further comprises a contact tip adjacent to said free end of said beam.

11. The electronic component of Claim 1, wherein said beam, viewed in a direction normal to said substrate surface, has a generally rectangular shape.

12. The electronic component of Claim 1, wherein said beam, viewed in a direction normal to said substrate surface, has an offset with respect to a central axis.

13. The electronic component of Claim 1, wherein said beam, in a lengthwise sectional view, has a linear shape.

14. The electronic component of Claim 1, wherein said beam, in a lengthwise sectional view, has an arcuate shape.

15. The electronic component of Claim 1, wherein said beam, in a lengthwise sectional view, has a corrugated shape.

16. The electronic component of Claim 1, wherein said beam, in a lengthwise sectional view, has a stepped portion near the base.

17. The electronic component of Claim 1, wherein said beam, in a cross sectional view, is generally V-shaped.

18. The electronic component of Claim 1, wherein said beam, in a cross sectional view, is generally U-shaped.

19. The electronic component of Claim 1, wherein said spring includes a lengthwise rib extending over at least a portion of the beam.

20. The electronic component of Claim 19, wherein said beam, in a lengthwise sectional view, has a stepped portion adjacent the base, and wherein said lengthwise rib extends to said stepped portion.

21. The electronic component of Claim 19, wherein said lengthwise rib extends to said base.

22. The electronic component of Claim 19, wherein said lengthwise rib extends into said base.

23. The electronic component of Claim 19, wherein said lengthwise rib comprises a lengthwise channel.

24. The electronic component of Claim 23, wherein said lengthwise channel has a regular geometric cross-sectional shape.

25. The electronic component of Claim 24, wherein said regular geometric cross-sectional shape is a shape selected from the group consisting of part-rectangular, part-trapezoidal, part-triangular and part-round shapes.

26. The electronic component of Claim 19, wherein the cross-sectional dimensions of said lengthwise rib are similar over the length thereof.

27. The electronic component of Claim 19, wherein a cross-sectional dimension of said lengthwise rib differs over the length thereof.

28. A method for testing an integrated circuit comprising:

providing a die having a substantially planar surface that has a plurality of microelectronic spring contacts formed on the surface, where each of the microelectronic spring contacts comprises a base mounted to the surface, a beam integral with the base and extending from a side of the base away from the surface, and free end of the beam opposite to the base, wherein the beam has an unsupported span between the free end and the base, and is capable of at least some flexure along an axis perpendicular to the wafer surface, and wherein each of said microelectronic spring contacts comprises an integral layer of resilient material;

contacting an integrated circuit with the spring contacts of the die; and

testing an integrated circuit of the die during said contacting step after backend processing of the die.

29. A method for testing a wafer including a plurality of integrated circuits comprising:

providing a wafer having a substantially planar surface that has a plurality of microelectronic spring contacts formed on the surface, where each of the microelectronic spring contacts comprises a base mounted to the surface, a beam integral with the base and extending from a side of the base away from the surface, and free end of the beam opposite to the base, wherein the beam has an unsupported span between the free end and the base, and is capable of at least some flexure along an axis perpendicular to the wafer surface, and wherein each of said microelectronic spring contacts comprises an integral layer of resilient material;

contacting a wafer having a plurality of integrated circuits formed thereon with the spring contacts of the substrate; and

testing a plurality of integrated circuits of the wafer during said contacting step prior to backend processing of said wafer.

30. A test head assembly for contacting a plurality of electronic devices on a semiconductor wafer, the test head assembly comprising:

a circuit board having a plurality of contact areas disposed on a circuit board surface thereof;

an interposer disposed in alignment with the circuit board adjacent to the circuit board surface, the interposer comprising a planar substrate having opposing interposer surfaces, a first plurality of integrally formed spring contacts mounted to the planar substrate, and extending from a first one of the opposing interposer surfaces, a second plurality of integrally formed spring contacts mounted to the planar substrate, and extending from a second one of the opposing interposer surfaces, wherein corresponding ones of the first plurality of integrally formed spring contacts are connected to corresponding ones of the second plurality of integrally formed spring contacts, and contact tips of the first plurality of integrally formed spring contacts contact corresponding ones of the plurality of contact areas;

a substantially rigid contactor substrate disposed in alignment with the interposer adjacent to the second one of the opposing interposer surfaces, the contactor substrate comprising a planar contactor surface having a first plurality of contact elements disposed thereon and positioned to contact corresponding terminals on the semiconductor wafer, and an opposite connecting surface having a second plurality of contact elements disposed thereon, wherein corresponding ones of the first plurality of contact elements are connected to corresponding ones of the second plurality of contact elements, and ones of the second plurality of contact elements contact corresponding contact tips of the second plurality of integrally formed spring contacts; and

a fixture connected to the circuit board, the interposer, and the contactor for holding the circuit board, the interposer, and the contactor in relation to one another.

31. The test head assembly of Claim 30, wherein the fixture further comprises adjustment means for aligning the contactor in relation to the circuit board.

32. The test head assembly of Claim 30, wherein the first plurality of contact elements comprise non-resilient contact pads.

33. The test head assembly of Claim 30, wherein the plurality of contact areas are disposed on the circuit board surface in positions corresponding to the terminals of the semiconductor wafer.